

Walking on Frozen Ground

Levels

Overview:

A local Elder visits the classroom to share information on permafrost in the local area.

Teacher's Note: This activity is repeated in the Level III-IV lesson "Tour of the Frozen Ground" and Level V-VI lesson "Uses of Permafrost." If other teachers in the school are using the ACMP curriculum, they may wish to collaborate on this activity.



Grades K-4

Objectives:

The student will:

- observe and draw local permafrost features; and
- describe a local use of permafrost (Level II only).

BSSD Standards Addressed:

Science

- SC 01.08 Uses 5 senses to make observations.
- SC 02.23.a The student demonstrates an understanding of the forces that shape Earth by identifying and comparing a variety of Earth's land features (i.e., rivers, deltas, lakes, glaciers, mountains, valleys, and islands).

GLEs Addressed:

Science

- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.
- [3] SD2.1 The student demonstrates an understanding of the forces that shape Earth by identifying and comparing a variety of Earth's land features (i.e., rivers, deltas, lakes, glaciers, mountains, valleys, and islands).
- [4] SD2.1 The student demonstrates an understanding of the forces that shape Earth by observing models of how waves, wind, water, and ice shape and reshape Earth's surface by eroding rock and soil.

Whole Picture:

Permafrost is hard to see on the landscape if you don't know what to look for. Even pronounced permafrost features—pingos, patterned ground, and thermokarst lakes—are hard to identify if there is not an expert nearby to point them out.

Many northerners know of permafrost because of their interactions with frozen soil. Many people first discover permafrost when they hit frozen ground while trying to dig a hole. Others notice permafrost in areas where they or others have cleared an area of insulating ground cover and the permafrost has thawed. When ice-rich permafrost thaws, buildings, roads, pipelines, and other structures can settle, requiring repairs that can be expensive.

People in some far-north places have dug, and still dig into permafrost to make refrigerated rooms to store meat. And, if permafrost remains in a frozen state, it provides a rock-hard foundation for things

above it. Over the years, northerners have learned to build on permafrost, often with elevated structures that allow cold air to circulate beneath.

Materials:

- Crayons (optional)
- OVERHEAD: "Permafrost Features"
- STUDENT WORKSHEET: "Walking on Frozen Ground" (Level I)
- STUDENT WORKSHEET: "Walking on Frozen Ground" (Level II)

Activity Preparation:

Invite an Elder to visit with students to share local knowledge of permafrost. Within the Activity Procedure are suggestions for Elder involvement; make adjustments as needed to ensure the Elder's comfort. Make sure the Elder has adequate transportation to and from the classroom, and arrange for snacks and drinks for both the Elder and students.

Activity Procedure:

1. Remind students they should be good listeners and respectful during the activity.
2. Introduce the Elder, and explain he or she will be sharing information on permafrost in the local area, such as how it has been used by people in the past, how it is used today, how it influences local subsistence activities, how it influences local infrastructure (buildings and roads), how one can tell if there is permafrost under the ground, and where it exists in the local area.
3. If weather permits, invite the Elder to take students on a short walk to investigate local permafrost features.
4. Upon returning to the classroom, show OVERHEAD: "Permafrost Features." Explain surface features associated with permafrost include patterned ground (polygons) and pingos. These features are caused by the freezing and thawing of the ground.
5. Distribute the STUDENT WORKSHEET: "Walking on Frozen Ground." If desired, provide students with crayons to draw their permafrost feature.

Answers:

Answers will vary.

Name: _____

Level

Walking on Frozen Ground Student Worksheet



1. Draw a permafrost feature in the space below.

2. Write the name of the feature drawn above.

3. Write the name of the Elder who spoke with your class.

Name: _____

Level

Walking on Frozen Ground

Student Worksheet



1. Draw a permafrost feature in the space below.

2. Write the name of the feature drawn above.

3. Write the name of the Elder who spoke with your class.

4. A. Describe a way permafrost was used in the past.

- B. Do people still use permafrost in that way today? Why or why not?
